Geophysical Research Abstracts, Vol. 8, 01801, 2006
SRef-ID: 1607-7962/gra/EGU06-A-01801

Characterisation of Continental Scale African Biomass Burning Patterns from Remote Sensing of Fire Radiative Power

G.Roberts (1), **M. Wooster** (1) and G. Perry (1,2)

(1) Dept. of Geography, King's College London, London, UK, (2) Now at School of Geography & Environmental Science, Tamaki Campus, University of Auckland, Private Bag 92019, New Zealand (martin.wooster@kcl.ac.uk / Fax: +44 207-8482287)

African Biomass burning is a well-known, globally significant source of trace gases and aerosols, but better-constrained estimates of total fuel consumption are required to properly assess the local and off-site effects of these pollutant emissions. A new approach for providing such estimates is via remote sensing observations of Fire Radiative Power (FRP), a variable proportional to the rate of fuel consumption. Use of the Meteosat-8 SEVIRI radiometer presents a unique opportunity to derive FRP at 15-minute intervals, allowing analysis of the complete diurnal cycle of biomass burning and calculation of the total fire radiative energy which is proportional to the fuel mass consumed. Here we present the first full year of African biomass burning FRP retrievals from SEVIRI, and compare them to those derived from near-coincident, but significantly less frequent, MODIS overpasses. Good agreement is shown on a per-fire basis, though at the regional scale SEVIRI typically underestimates cumulative FRP somewhat with respect to MODIS due primarily to its inability to confidently detect fire pixels with FRP $< \sim$100 MW. Correction factors are derived for this, and using calibration relationships developed during ground-based experiments SEVIRI-derived FRP measures are converted into estimates of the rate and total quantity of biomass combusted across Africa. This work represents the commencement of a multi-year analysis of African biomass burning patterns, providing an insight into pyrogenic emissions from the African continent at a hitherto unobtainable temporal frequency, highly suited to the linking of pollutant emissions estimates to models of atmospheric transport.